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to discussion, emphasized all this. So, here too, transition is written large over much of his work. This, more than aught else, explains the defense outlined by the Dean of Westminster, when he refused to entertain the proposal for a Spencer monument in the Abbey. And, as Dr. Duncan does not see (II., 244 f.), Hegel would have concurred, would have trimmed, possibly, upon his famous foot-note about the philosophy of hair-dressing. Philosophically, Spencer was fated to be a mighty *Bahnbrecher*; such an one stood in need; and he accomplished the full tale of bricks. Accordingly, it is nowise astonishing that his appeal to philosophers *von Fach* has not been very fundamental. How could it be in the circumstances? Try the case from the scientific side. What would scientific men think of a colleague who comported himself in like manner, and then permitted acclaim as the sole high-priest? Notwithstanding, no one can deprive him of his rightful place as advance agent of evolutionary phenomenology; yet, for this very reason, our generation hesitates to enroll him in the apostolic succession of constructive thought. Further, the same facts indicate why, to this good hour, he has not received more than a modicum of the recognition that he earned so richly. They also account for some of his life-long asperities.

Pleasing glimpses are given of Spencer's relations with his friends, which dispel the wide-spread belief that he was a surly curmudgeon, "all intellect and no heart." Among these, one of the most interesting to Americans can not but be his unclouded friendship with Youmans, the founder of the *Popular Science Monthly*. But, beyond question, the most impressive factor in the personality was the indomitable will whereby, taking up arms against a sea of trouble, the man conquered, and all for the purest of ideal interests. To this battle the history of the race presents few parallels, and it bears a heartening message of encouragement to every worker for the spiritually indispensable, as Carlyle called it finely.

Finally, for the benefit of American readers, a word should be added concerning Dr.

Duncan. He is an Edinburgh philosopher, who acted as Spencer's secretary for several years in the late sixties. In 1870, he proceeded to India as professor of philosophy in the Presidency College, Madras. After fourteen years' service, he became principal of this institution. From 1892 till 1899, when he retired, he occupied the important administrative office of Director of Public Instruction for the Madras Presidency. He is known as one of Spencer's oldest collaborators in the "Descriptive Sociology." He seems to me to have performed a task of infinite difficulty, due partly to the reasons outlined above, with admirable spirit and skill. The extreme care with which the book has been produced—I have noted but three trifling misprints—and the thorough, workman-like index, are among our least obligations to his *pietas*.

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Notes on the Development of a Child, Parts 1-4, Vol. I., 1893-1899. The Development of the Senses in the First Three Years of Childhood, Vol. II., July 25, 1908. University of California Publications in Education, Vols. 1 and 4. By MILLICENT WASHBURN SHINN. Berkeley, The University Press. Pp. (Vol. I.) 424. \$2.25. Vol. II., pp. 258. \$2.50.

Dr. Shinn's first contribution to our knowledge of "the ontogenic evolution of the faculties of the human mind," which Professor Le Conte, in an introductory note to Volume I., describes as the "most important of all possible subjects," was published fifteen years ago as Part I. of the "Notes." (Pp. 88.) This part, after a page of biographical notes and two pages giving measurements of growth in height and weight, consists of data relating to the development of sight in infancy, chiefly during the first two years, and classified under such headings as: sensibility to light, movements of the eyelids and eyeballs, fixation, direction of look, sensibility to colors, color preferences, discrimination of forms geometrical and other, understanding pictures and other representations.

Part II. of Volume I., pp. 89-178, appeared

in 1894. The first fifteen pages of this part continue the notes on the development of sight to the end of the third year. Then follow notes on the development of hearing (sensibility to sound, locating the direction of sounds, recognition and discrimination of sounds, interest in music); the dermal senses (contact, pain, temperature); taste and smell. Parts 3 and 4 of Vol. I., pp. 179-424, appeared in 1899. Pages 179-298 report the author's observations on sensations of muscular activity, motion and position; organic sensations, and general sensation. The remaining pages of parts 3 and 4 are given to reports on various sorts of movements—spontaneous, reflex, instinctive; equilibrium and motion (which is full of data on sitting alone, creeping, standing, walking and running); instincts connected with food-taking, learning to grasp with the hands, and so on. The volume may be described as a rich storehouse of accurate, minute observations relating to the sensory and motor development during the period of infancy.

With respect to the sources, method and purpose of Volume II., the author writes:

My original data for the following study have come almost entirely from a journal of the development of a single child [the author's niece]. . . . But in the later examination of the data, I have supplemented them with the observations of others. My record was but little guided by any previously formulated theory, or by the effort to solve any previously formulated problem. . . . In the main I aimed only at a scrupulously objective record of the facts of development, as they appeared quite spontaneously.

The data thus collected were classified and published as Volume I. of the "Notes," as indicated above.

The purpose of Volume II. is to summarize and interpret the previously published observations relating to the development of the senses. By "interpretation" the author means tracing "the development of the senses from stage to stage, with reference to the genetic relationship of these stages, and the process by which each unfolds from the preceding"; the search for a general law of this unfolding; the consideration of "the bearing

of any results thus reached on current problems of psychology"; and, finally, the author formulates, as corollaries, the pedagogical suggestions of the study.

Of the two methods which have been employed in the study of infancy—the comparative and the biographical—Dr. Shinn regards the latter "thoroughly checked and corrected by comparison" as "the true one for the study of children of the earliest period." Experimental investigation, no doubt, is sometimes necessary, but it is just as well, in the author's opinion, that the study of infancy "should wait a while for any considerable experimental investigation, and should depend for the present on pure observation." The next step is quite easy and natural; namely, to banish from the field of child-study all mere scientists—psychologists and physiologists—and declare child-study to be a new and independent science. And this, in a sense, the author does. She observes that "a deep knowledge of adult psychology," has not been particularly helpful in the study of infancy, and expresses the opinion that the most solid and valuable contributions to our knowledge of babies, so far, have come not from psychologists, but from physiologists." Leaving aside the differences of opinion which may exist as to the relative importance of the contributions of psychologists and physiologists to child-study, it may be said that the *reason* assigned for the statement of the text—that in genetic psychology "the genetic element outweighs the psychologic" (Vol. II., p. 7)—seems to rest upon a curious misapprehension of the province and scope of modern psychology in general, and of the problems and methods of genetic psychology in particular. But, on the other hand, the physiologist, Dr. Shinn believes, can not guide the future of child-study, for he "stops short of the real point of interest in child development, the germination of the higher psychic activities." With the psychologists and physiologists both repelled from this new territory, and no invasions being threatened from other quarters, child-study may be free to develop "in the main its own theoretic basis," (1) by gathering a large mass of data by observation

and limited experiment, and (2) by classifying, comparing and drawing inductions from these facts.

Continuing, the author advances the usual arguments for preferring the inductive method to the method of proceeding, theories in hand, in scientific research. In this connection, Professor Baldwin's well-known "Mental Development in the Child and the Race" is cited as a horrible example of what is likely to happen when an investigation is dominated by preconceived theories. That work, Dr. Shinn says, has failed to supply the theoretic basis for future observations in child-study, "because it has, after all, no close practical relation to that study." However highly the author may value that work on other grounds, evidently she does not hold it in very high esteem as a contribution to child-study.

The author next considers the difficulty of finding a satisfactory principle of classification for the data of child development. The analytic headings "dismember every incident we would report, for the actual development we are tracing is essentially synthetic, yet we must needs analyze, in order to interpret." All in all, a modification of the Spencerian formula for the process of evolution supplies a satisfactory guiding principle—viz., child development is "a progressive movement consisting of the integration of simpler activities into more complex, and the differentiation of specialized ones, out of generalized." The validity of this principle is not discussed, "because the most important part of the following thesis is a contribution to that very discussion."

Leaving the introduction and passing to the body of Volume II., we have the following divisions and sub-divisions: Part I., Sensibility of the new-born (visual, auditory, dermal, etc., sensibility). Part I. may be described as a condensation of the data reported in Volume I. relating to the sensibility of the new-born, together with numerous quotations from other students of infancy—Tiedemann, Kussmaul, Sigismund, Champneys, Preyer, Mrs. Moore, Mrs. Hall—and from the anatomical studies of Professor Flechsig in explanation and confirmation of the views ex-

pressed in the text. The principal conclusions of Part I. are:

The child is at birth capable of receiving impressions in every department of sense (unless for a short delay in the case of hearing). . . . The sensations of the new-born are very limited and feeble, and seem to be simple and detached experiences, . . . are justly to be regarded as *pure sensations* in which there is no consciousness of space, of externality or internality, of surrounding objects, or of self (pp. 12, 47).

Part II., The Synthesis of Sense-Experience (the visual-motor association series, the tactile-motor association series, synthesis of the visual-motor and tactile-motor associations, auditory associations, associations of the minor special senses, feeling of a bodily self). This part (the nature of which is sufficiently well indicated by the heading and sub-headings) contains, in the writer's judgment, the best treatment of the topic heading the chapter which has thus far appeared.

The author's principle of classification is used with great effectiveness in this part in organizing and interpreting the wealth of detailed observations which she had previously reported.

It is amusing to note in passing that the author completely pulverizes, in the crucible of over-literality one may think, Professor James's oft-quoted, "big, blooming, buzzing confusion" as a description of the mental state of early infancy. Her way is better: it is more scientific, and it is more euphonious, more poetic. She writes:

Rather does the babe drift softly in among phenomena, wrapped away from their impact in a dim cloud of unconsciousness, through which but the simplest and faintest gleams and echoes make their way to him. . . . (Vol. II., pp. 144 f.).

Part III. traces the Development in Discrimination and Interpretation in the different sense-departments—sight, hearing, touch, etc. The treatment of sight, particularly the section on "color vision," is worthy of special mention.

Two general conclusions of the entire work remain to be noted: (1) The development of the senses does not follow the phylogenetic parallel—though some specific phases of the

development show such correspondence, (2) the psychic life of the child centers from the first about the higher senses, especially sight, not the lower.

The Pedagogical Conclusions, Part IV., are all interesting, most of them are well-grounded, some of them are novelties or at variance with current practise and doctrine. But Dr. Shinn does not prescribe with undue confidence; pedagogy is still too much a matter of individual opinion, of more or less, of the true or false, practical or impractical, according to circumstances, to warrant laying down iron-clad rules for the management of infants. She does, however, offer a few general principles and a few special suggestions: (1) Nature herself will, in the main, attend to sense education. (2) Nothing in the infant's environment educates it as does the human presence. . . . The baby who is left lying on the bed alone a great deal, does not develop as brightly, and learn to use his senses happily as soon, as the baby that is cooed over and played with. (3) The secret of happy and wholesome development in the early years seems to be mainly in giving the largest possibility of free action. (4) When the child reaches the stage of instruction "tasks must be set, and efforts must be made." (5) The superficial recapitulation theory that a child is "only a little animal," and in no need of human education, often leads to harmful neglect of the early years. (6) The child can and probably should be taught before the end of the second year the names of all the simple plane figures, the alphabet, the Arabic figures, and to discriminate and name the principal colors.

It may safely be said that the 682 octavo pages of the two volumes before us, together with the volume on "The Biography of a Baby," published in 1900, and a number of magazine articles, entitle Dr. Shinn to the distinction of having made the largest, and, in certain respects, the most important contribution to our knowledge of the mental life of babies; and, somewhat incidentally, she has given us data and interpretations of no slight value in the treatment of the problems of functional and analytic psychology. It is

clear that Dr. Shinn has not exhausted her store of data. Students of infancy and childhood will welcome forthcoming volumes, if such there be, in the assurance that they will contain valuable material presented in a readable form.

To be sure, no one will take up volumes which trace the physical and mental development of infants and expect light, summer afternoon reading. As literature, books on child psychology rank a little higher, but not much, than laboratory guides in chemistry; and for the present they are not likely to be interesting except to persons who have babies near at hand whom they wish to study and to the specialists in psychology.

Finally, the writer may be permitted a few general observations in the way of suggestions for future editions: (1) The work should take account of the recent studies in this field, (2) the number of repetitious passages might be considerably reduced, (3) many of the footnotes should be incorporated in the text, (4) a full table of contents for each volume would add to the value of the work.

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Nautical Charts. By G. R. PUTNAM, Mem. Am. Soc. C. E. Pp. viii + 162 (including 35 pages of illustrations). New York, John Wiley and Sons. 1908.

The author of this book has had long experience in the coast and geodetic survey. During the years 1900-1906 he was the director of coast surveys, Philippine Islands, in general charge of extensive surveys made for the production of nautical charts. He is now in charge of the drawing and engraving division at the Coast and Geodetic Survey Office, Washington.

The book is written in non-technical language to as great an extent as is feasible. The general reader will find it clear and concise.

A carefully selected two-page list of the more important books or papers bearing on nautical charts and related subjects is given.

A chapter (30 pages) entitled, Charts and Maps, gives a short historical statement of the